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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,012	03/25/2002	Heinz-Jürgen Muhlen	MUHLEN EL AL-1 (PCT)	9128
25889	7590	03/24/2005	EXAMINER	
WILLIAM COLLARD COLLARD & ROE, P.C. 1077 NORTHERN BOULEVARD ROSLYN, NY 11576			PATEL, VINIT H	
			ART UNIT	PAPER NUMBER
			1764	

DATE MAILED: 03/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/089,012	<b>Applicant(s)</b> MUHLEN ET AL.	
	<b>Examiner</b> Vinit H. Patel	<b>Art Unit</b> 1764	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 March 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>15 Aug 2002</u> .   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Specification***

1. The disclosure is objected to because of the following informalities: the application does not contain section headings, such as the "Background of the invention, Brief summary of the invention, Brief description of the several views of the drawing, and Detailed description of the invention." See MPEP 608.01(a).

Appropriate correction is required.

The disclosure is objected to because of the following informalities: appearing in the first paragraph on page 1 and last paragraph of page 2 of the specification are examples of "[1]" and "[2]", which in U.S. practice denote that the characters in brackets are to be deleted, and are not considered citation references.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1, 3, 4, 8, 15, 19 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, the phrases "possibly" and "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Examiner has interpreted claim 1 not to include adding the steam reactant in the reformer.

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Regarding claim 3, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Examiner has interpreted claim 3 not to include sand, gravel, split, aluminum silicate corundum, greywacke, quartzite, or cordierite.

Regarding claim 4, the phrase "preferably" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Examiner has interpreted claim 4 not to include magnetic materials or non-metallic ceramic materials, and also sintered materials or iron ore pellets.

Regarding claim 8, the phrase "preferably" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Examiner has interpreted claim 8 not to include that the sifting medium is air, and in turn again combustion air from the firing stage, or exhaust gas recycled from the firing stage.

Regarding claim 15, the phrase "preferably" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Examiner has interpreted in claim 15 that the reactant is admitted into the pyrolysis reactor at any point.

Regarding claim 19, the phrase "preferably" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Examiner has interpreted in claim 19, the heat-carrying medium to be a basic, solid substance.

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Regarding claim 20, the phrase "if need be" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d). Examiner has interpreted in claim 20 that the product gas is cooled and reused for generating steam, or added to the firing stage, or is added to carbon-containing residue.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-20 is/are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-17 of copending Application No. 10/416/137. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims are directed to a method of gasification in which organic substances are converted into a volatile gas by contact of a heat carrying medium in a pyrolysis reactor and the heat carrying medium is separated from the carbon residue in a separation stage then supplied to a heating zone, the carbon residue is used to heat the heat carrying medium, the hot heat

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carrying medium is extracted from the heating zone into a second reaction zone which is a migrating bed reactor, wherein the mixture is comprised of pyrolysis gases and reactant and converted into product gas, and the heat-carrying medium after it has passed through the second reaction zone is recycled into the pyrolysis reactor.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3, 9, 10, and 14-20 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Deglise et al., U.S. Patent No. 4,568,362, in view of McIntosh et al., U.S. Patent No. 5,662,052

Regarding claims 1, 18 and 19, Deglise et al. discloses a method of gasifying organic substances comprising feeding the organic containing materials into a pyrolysis reactor to produce a high caloric value gas (C2/L27-C5/L3), by contacting the organic material to a heat carrier medium in the pyrolysis reactor to cause pyrolysis of the organic material to form a carbon residue and pyrolysis gas (abstract & drawing); separating the heat carrying medium and feeding the carbon containing residue into a firing, the carbon containing residue heated in the firing and the heat carrier medium being heated by the gas formed from the firing (where it is separated by the burning off

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of the coke) (C2/L67-C3/L23 & drawing); feeding at least a heat carrier medium to a reactor and feeding at least a portion of the pyrolysis gas into the reactor (C2/L67-C4/L5); wherein a reactant (steam) is added (C2/L27-C5/L3) to produce a product gas; and the heat carrier is fed (recycled) back into the pyrolysis reactor (C2/L27-C4/L5).

However, Deglise et al. does not disclose the gasifier designed to include a migrating (fixed/moving or rotary drum) bed reactor, that converts the pyrolysis gas into product gas. McIntosh et al. discloses that rotary drum (fixed/moving or migrating type) are preferable alternatives to the fluidized bed reactors because they are simpler and offer better control over various process conditions (C1/L31-C2/L40). It would have been obvious to one of ordinary skill in the art at the time of the invention to replace the fluidized bed reactor of Deglise et al., with the rotary drum (migrating type) reactor of McIntosh et al., for the purpose to simplify operations and provide better control over various process conditions.

Regarding claim 3, Deglise et al. discloses the heat carrier medium is refractory particles (abstract).

Regarding claim 9, Deglise et al. discloses the step of including the pyrolysis gas to produce heat (in the firing) and utilizing the heat in the pyrolysis and reaction with pyrolysis gas (C1/L54-66).

Regarding claim 10, Deglise et al. discloses that feeding (recycling) the carbon residue and said heating carrier medium into the pyrolysis reactor (C2/L67-C3/L23 and drawing).

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Regarding claim 14, Deglise et al. further discloses feeding at least a portion of the heat carrier to the pyrolysis reactor and to a gas reactor (second reaction zone or reformer) (C2/L67-C4/L5 and drawing) and the heat carrier is fed (recycled) back into the pyrolysis reactor (C2/L27-C4/L5).

Regarding claim 15, Deglise et al. discloses that a reactant (steam) enters the pyrolysis reactor (C2/L27-C5/L3).

Regarding claim 16, Deglise et al. discloses the use of a gas as an energy source (C4/L50-65) not of the charged material nor subsequent products.

Regarding claim 17, Deglise et al. discloses that the carbon containing residue is collected and discharged into a tray (C4/L10-21).

Regarding claim 20, Deglise et al. further discloses the product gas is cooled and reused for generating steam (C3/L27-55).

5. Claims 2, 4 and 5 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Deglise et al., U.S. Patent No. 4,568,362, in view of McIntosh et al., U.S. Patent No. 5,662,052 and further in view of Velcich, U.S. Patent No. 5,262,577 or Rudolph et al., U.S. Patent No. 3,738,103.

Regarding claim 2, Deglise et al., in view of McIntosh et al. discloses all of the limitations as set forth in paragraph 4, but do not disclose reacting the pyrolysis gas with reactant in the presence of a catalyst. Velcich (C1/L67-C2/L2) or Rudolph et al., (C4/L14-24) discloses the reaction of pyrolysis gas is improved when conducted in the presence of catalyst. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the catalyst in the second reaction zone of Deglise et al.



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because it would be the use of a known catalyst for its intended use in a known environment to accomplish an entirely expected result.

Regarding claims 4 and 5, Rudolph et al. further discloses the heat carrying medium is shaped (inherently), metallic and catalytically active in the second reaction zone (C4/L20-24).

6. Claims 6-8 and 11 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Deglise et al., U.S. Patent No. 4,568,362, in view of McIntosh et al., U.S. Patent No. 5,662,052 and further in view of Haberman, U.S. Patent No. 4,038,100 or Gwyn et al., U.S. Patent No. 4,110,193.

Regarding claims 6-8, Deglise et al., in view of McIntosh et al. discloses all of the limitations as set forth in paragraph 4, but do not disclose explicitly how the separation of the heat carrying medium and carbon-residue is carried out.

Haberman discloses that separation of the pyrolysis products (char) and heat carrying medium may be carried out by any conventional means including by size differential (mechanical means) (C3/L61-68) or magnetic means (C5/L30-34) and Gwyn et al. discloses that separation of the heat carrier may be effected with the use of air utilized pneumatic transport out of the reactor (C22/L5-15). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Deglise et al., in view of McIntosh et al. to utilized the separation of char and heat carrier techniques disclosed in Haberman and Gwyn et al. for the purpose to provide a method to recycle the heat carrier or utilize the isolated char.

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Regarding claim 11, Gwyn et al. discloses that a batch method is utilized (C1/L30-32) when carbon material exits the pyrolysis reactor.

7. Claims 12 -13 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Deglise et al., U.S. Patent No. 4,568,362, in view of McIntosh et al., U.S. Patent No. 5,662,052, further in view of Olsen et al., Unit Processes & Principles of Chem. Eng.

Regarding claims 12 and 13, Deglise et al., in view of McIntosh et al. discloses all of the limitations as set forth in paragraph 4, but do not disclose the use of the sensible heat of the product gas and exhaust gas of the firing to generate steam as the reactant or used for heating the organic substance directly. While the references do not disclose explicitly the use of the sensible heat of the product and exhaust gas to heat the organic substance or generate steam, it was well known in the art at the time of the invention that economics of processes can be affected by knowing where in the process, heat is produced and where the heat can be used/recovered to improve efficiency and minimize waste (See Olsen et al., pp 1-3). Therefore, as the specification is silent as to unexpected results, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the sensible heat produced from the product and exhaust gas to generate steam and heat the organic substance for the purpose to improve process efficiency and minimize waste.

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**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vinit H. Patel whose telephone number is (571) 272-0856. The examiner can normally be reached Monday – Friday from 9:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached at (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Vinit H. Patel  
March 22, 2005



Alexa Dorosheuk  
Patent Examiner  
Art Unit 1764